FIG. 5.—Case II.

FIG. 6.—Case II.

FIG. 7.—Case III.

FIG. 8.—Case III.

FIG. 9.—Case IV.

FIG. 10.—Case IV.

84, regular. An electro-cardiogram (Fig. 8) shows left preponderance, regular supraventricular rhythm, and physiological waves.

CASE IV.—Right Branch Block Disappearing under Treatment.

J. M., male, aged 73, was first seen on May 24th, 1929. He stated that he had had intractable cough for five years, asthmatic

attacks, and progressive dyspnoea; there was a history of hæmoptysis and pain in the chest. An electro-cardiogram (Fig. 9) shows right branch block.

Seen on October 3rd, he stated that he had not been so well for years; he had no cough, very little dyspnoea, and no asthmatic attacks. Electro-cardiogram (Fig. 10) no longer shows impaired conductivity in the right ventricle.

KÜMMELL'S DISEASE.

BY

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IN 1894 Kümmell of Hamburg described a disease of the spine occurring in three phases. The condition was brought about by an injury to the spinal column caused by direct violence, accompanied by local pain and discomfort of short duration. This constituted the first phase, and was followed by a second, latent, period of varying length of time—months or years—with no symptoms, the patient being able to continue his usual employment. This spell of freedom from pain and disability was then followed by a third phase in which there was the gradual onset of local and radiating pain, muscular weakness, kyphotic deformity of the spine, and cord irritation, these symptoms and signs being referable to the segment of the cord corresponding to one or, perhaps, two injured vertebrae, and being indicative of compression.

In Kümmell's cases, as in those recorded since, there was the definite history of a fall and a resulting local injury of such severity as to produce a compression fracture of a vertebral body. Then came the latent period; and, afterwards, delayed or remote signs and symptoms of cord compression brought about by a vertical collapse of a vertebra with postero-anterior wedging. The resulting

compression paraplegia in most recorded cases was usually slight, especially at first; and most cases were relieved by rest and immobilization.

The following record is thought worth publishing because: (1) it is that of the second case of Kümmell's disease of the cervical spine published, the first having been recorded by Cardis, Walker, and Olver in the *British Journal of Surgery*, 1928 (p. 616); (2) there are two superimposed cervical vertebrae diseased—namely, the sixth and seventh; and (3) because comparatively few cases of Kümmell's disease are noted in the literature.

Miss E. D. M., aged 47 years, was admitted to hospital on May 17th, 1929, complaining of pain in the back of the neck, and pain in the right hand radiating from time to time along the arm to the neck. The duration of her illness she gave as three years.

History.—Her ailment dated from an occasion in 1916 when she fell off the top of a six-foot flight of steps on to the back of her neck. The neck was painful for a day or two, then got better, and gave her no further pain or trouble until June, 1927—that is, eleven years after the accident—when she noticed tingling of the fingers of the right hand and a return of the pain in the neck on movement and palpation. At this time (June, 1927) the first radiogram was taken. It showed caries of the sixth and seventh cervical vertebrae, with some degree of wedging of both; there was no cervical rib. In October, 1927, the pains became intensified, especially in the fingers of the right hand, which now felt more or less constantly cold. Housework so aggravated matters that she was no longer able to do it properly, and she began to lose sleep at nights. In the mornings, at this time, there was weakness in the muscles of the right hand and arm, so that she could not

grip properly, and brushes, etc., kept falling out of her grasp, and so that she could not pick up a pin or piece of thread. If she held her hand above her head for a few moments the pain became temporarily easier and she could resume her housework; but by and by all work became impossible, and she was compelled to rest. In January, 1928, the neck pain persisting, she was again x-rayed, with the same result; the caries, however, did not appear to have become worse in the interval since the previous

FIG. 1.—Miss E. D. M. Lateral view, showing disease of sixth and seventh cervical vertebral bodies.

examination. In the spring of 1928 all symptoms disappeared, so that she was able to resume her full employment; but in December, 1928, with the onset of cold weather, pain and loss of power returned, this time affecting both hands and arms, and spreading slowly along the limbs and over the shoulders to the neck. Dr. Malpas, at this time, made the following radiographic report:

"The bodies of the sixth and seventh cervical vertebrae appear to be involved in a process of gross trouble accompanied by collapse of both bodies."

The only other illness the patient recollects having had was exophthalmic goitre. This she had in 1918, and was off work for three months, during the whole of which time she had radiotherapy, which, she states, quite cured her.

There is no family history of tuberculosis. Her father died, aged 83 years, of senility. Her mother died, aged 62 years, of cerebral meningitis. She has four brothers, all alive and healthy. There were eight sisters, two of whom died: one, aged 34 years, in childbirth, her death appearing to have been hastened by goitre and heart disease; the other, aged 47 years, of goitre and heart disease. The other sisters living are strong and well. All her people were born and brought up in Hampshire.

State on Admission.—Pulse 80, temperature 98°, blood pressure 150/100 mm. of mercury. Her usual attitude is sitting upright in bed without the support of pillows. When she does lie down she needs an extra pillow. When sitting up she is often noticed to give support to her neck and head by placing one hand behind her neck; at other times she is noticed to support her chin with her hand. She appears to hold her head and neck rigid and fixed, moving them as little as possible; yet, when asked to, she can move her head and neck in all directions, there being surprisingly little limitation of movement or rigidity or pain. What pain there is seems to be easily bearable. She is well nourished and of good colour. Except for some crepitus on moving both knee-joints, there is no evidence of other joint or bone disease. There are no scars or stigmata of any kind.

Examination of the neck reveals an undue prominence of the sixth and seventh cervical spines, with some extent of local kyphosis, and with lateral deformity and fullness to the right of the mid-line. These spines are tender to pressure and percussion, as are the parts adjacent. Any rigidity is strictly local. There are no enlarged lymphatic glands anywhere; no enlargement of thyroid or of spleen. The heart and lungs are normal on examination. The tongue is clean, and the five teeth which remain in the lower jaw appear clean and well cared for. Urine: sp. gr. 1010; acid; no albumin; no sugar; no deposit. All tendon reflexes are normal, though brisk. There is no muscle wasting or paralysis, and no sensory defect, clinically. The radiographic report on the cervical spine is as follows:

"There is marked erosion of the seventh cervical vertebra as viewed laterally. The caries appears to penetrate fairly deeply

into the substance, and already there is some deformity noticeable in the position of the vertebra. Two vertebrae are affected—namely, the sixth and seventh cervical vertebrae."

Since Admission.—The temperature has been normal except for one rise to 99°, which lasted for six hours only. The pulse rate has been within normal limits. There has been no impairment of general health. The urine has remained normal. There has been no cough, and lung examination has at all times been negative. The Wassermann and Kahn reactions have been negative, and so has the Pirquet tuberculin skin test. No changes have been found in the skeleton other than those found in the cervical spine. Syphilitic spondylitis, Pott's disease, cervical rib, have all been excluded in the diagnosis.

The treatment given was rest in bed to begin with, and the giving of calcium-containing foods and of calcium phosphate in pill. Mr. Ellis Bowden kindly saw the patient with me, and advised the use of a poroplastic collar. This was fitted, and she was discharged from hospital on June 25th, 1929, to the care of Dr. J. L. Reeve, who had referred her to hospital.

The above record corresponds fairly closely with Kümmell's original description of the disease. In his series of cases the injury was usually a direct one, the result of a fall, and was referred to one vertebral spine, dorsal or lumbar. The diagnosis of the condition depends upon the history, the local pain and deformity, and the radiographic appearances. The disease has usually affected those vertebrae known to suffer most in trauma to the spinal column—namely, the lower dorsal, the first lumbar, and, as in our case, the sixth and seventh cervical vertebrae. The wedging seen in the x-ray picture is due to the vertical collapse of the vertebral body from pressure. The thin edge of the wedge is ventral, the thick end is dorsal and bulges into the lumen of the spinal canal. In the various radiograms taken in our case the intervertebral discs showed no damage.

At first Kümmell believed the disease to be a traumatic osteo-arthritis of the spine; but, later, he came to consider the trouble more likely to be due to fracture. The disease appears to result from a compression fracture causing a traumatic spondylitis, inflammatory and reactionary, which is followed by absorption or osteoporosis of the centrum of the vertebra. The condition seems to be best named a rarefying osteitis. In any case, there appears to be no doubt as to the erosion of the body of the vertebra as a

FIG. 2.—Miss E. D. M. Photograph taken May, 1929. Deformity in neck easily visible.

sequel to a definite reactionary inflammation. In Kümmell's disease there is no glandular enlargement of note, nor any abscess formation.

The case at once suggests the need for radiographic examination, not only of that portion of the spine injured, but also of the whole column, as soon as possible after the accident, and again later on if pain and discomfort persist or recur. Railway spine and the painful spine of traumatic neurasthenia should in all cases be radiographed in their whole length. If this is done I feel certain that Kümmell's disease will be found to occur oftener than is supposed.